Renewable Energy in Michigan's 21st Century Electric Energy Plan & MREP Next Steps 2007

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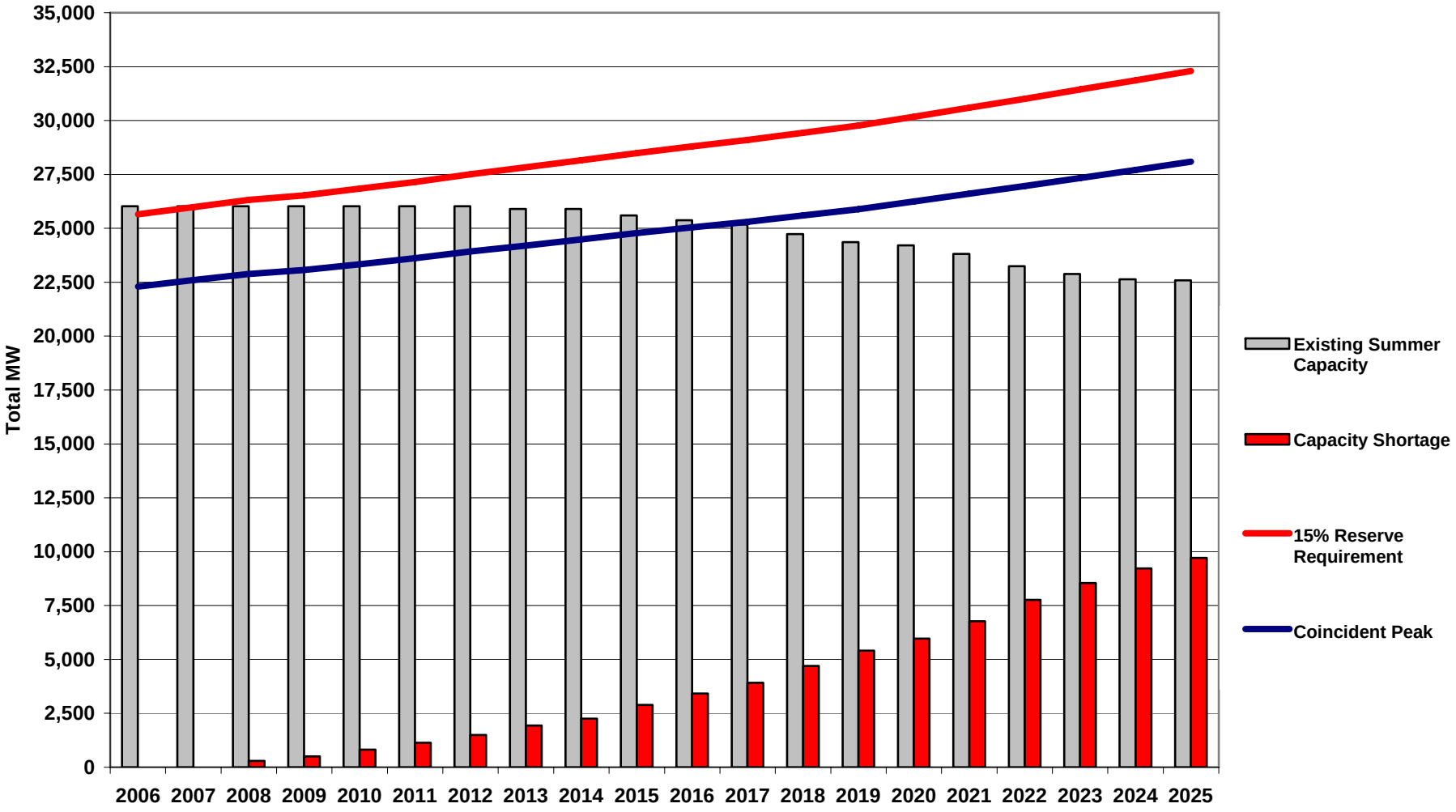
Michigan's 21st Century Energy Plan

MECS Resource Gap Analysis
Summer Peak Load and Resource Balance of Existing System



* Excludes Upper Peninsula

Renewable Energy Technology Costs

	2007 21st Century Energy Plan Report		2006 Capacity Need Forum Report	
Technology	Available MW (2015)	Cost (¢/kWh)	Available MW (2015)	Cost (¢/kWh)
Wind	525–2,400	7.2	415	6.9
Landfill Gas	131	7.4 (new) 7.0 (existing)	131	6.9 (n) 6.6 (e)
Anaerobic Digestion	82	8.2	51	6.9
Cellulosic Biomass	385	6.9	--	--
CHP	180	7.2	547	5.2–6.1

Modeling Results

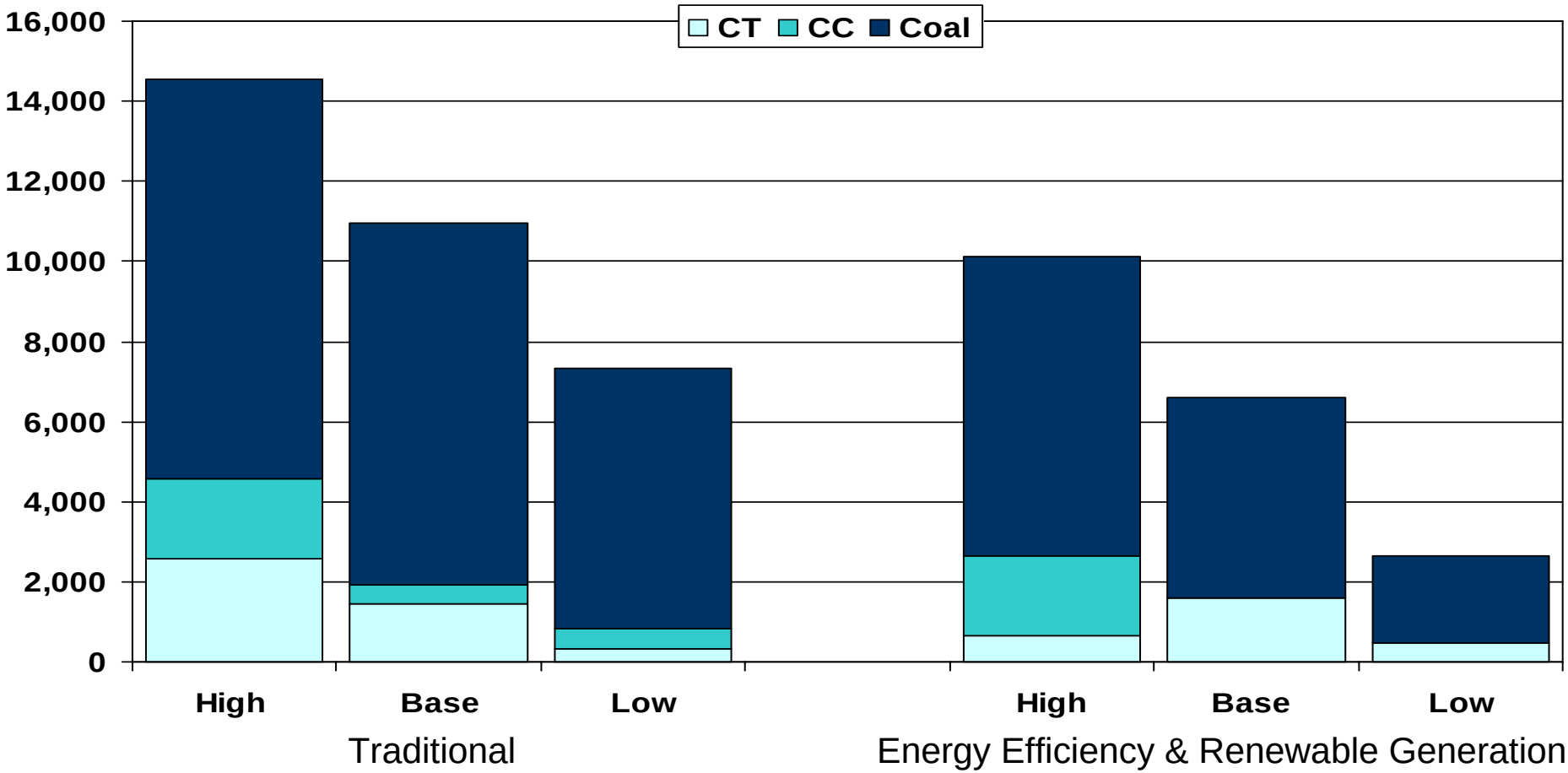
- Need to maintain reliability and reserve ratio causes model to select combustion turbines by 2008
- In the base CT-only case, the model builds combustion turbines for reliability and purchases economy energy in external markets
- When allowed, the model selects baseload coal units for capacity and energy as soon as one can be made available

Modeling Results (2)

- Total electric cost can be reduced by $2 billion by enabling traditional generation construction and another $2 billion through energy efficiency and renewables
- Base demand and energy forecast always results in new baseload plant being selected within first ten years

Comparing LP Scenarios

Traditional vs Energy Efficiency & Renewable Generation
Load Growth Scenario over 20 years: 2006-2025



Contingency Review

- Fuel price changes do not alter resource choices
- Demand and energy sensitivities cause more or less baseload and combustion turbines to be selected but does not favor technology type
- Transmission expansion does not eliminate baseload construction in Michigan, but does eliminate most combustion turbines

Contingency Review

- Low market penetration efficiency program results in lower total electricity costs than traditional generation only cases
- Greenhouse gas controls represent major risk exposure that can be reduced through use of energy efficiency and renewable energy measures

Policy Initiatives

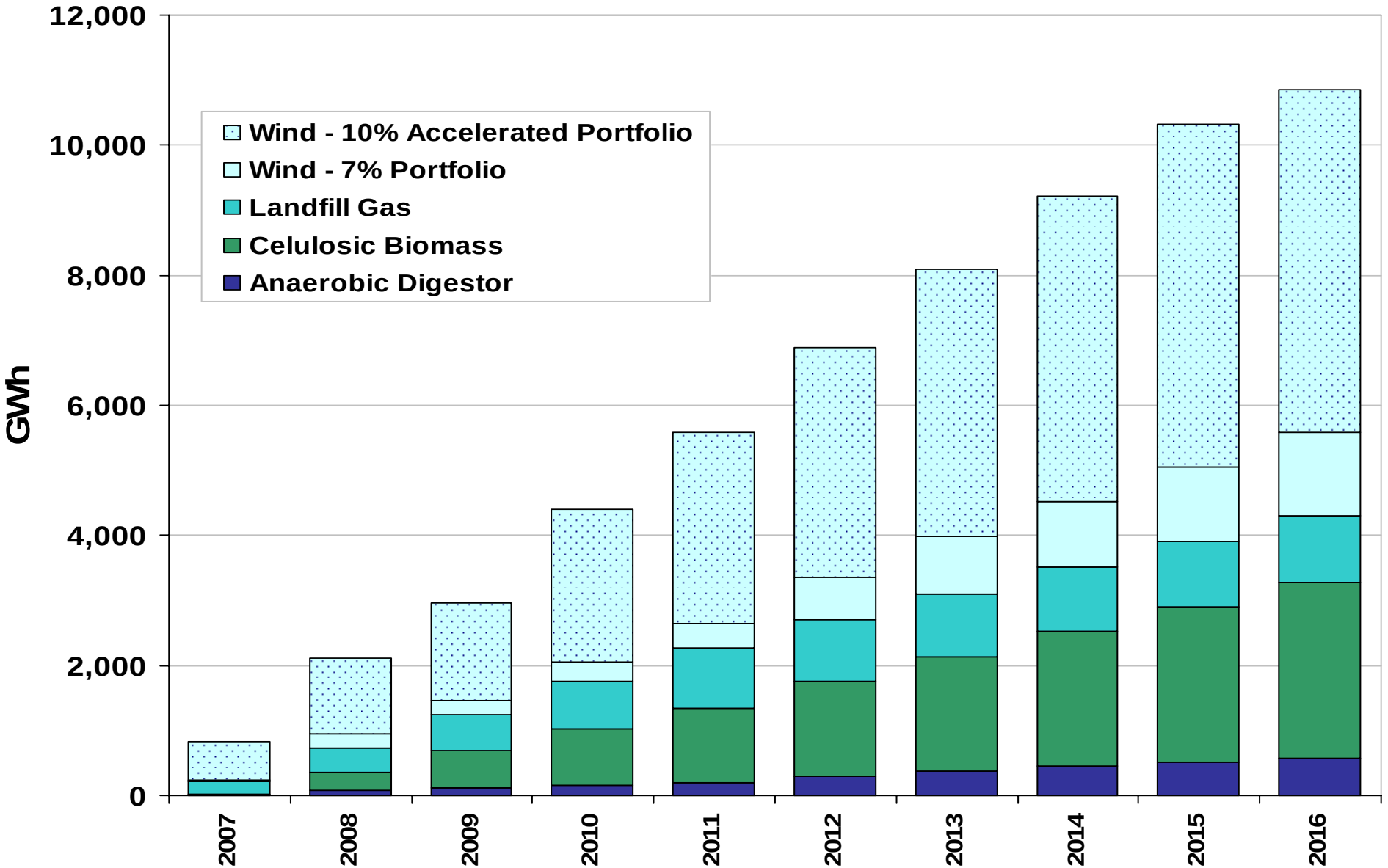
- Central Station – Michigan's hybrid market
- Energy efficiency
  - Efficiency measures
  - Load management
- Renewable Energy
- Distributed generation

Renewable Energy
Proposed Legislative Changes

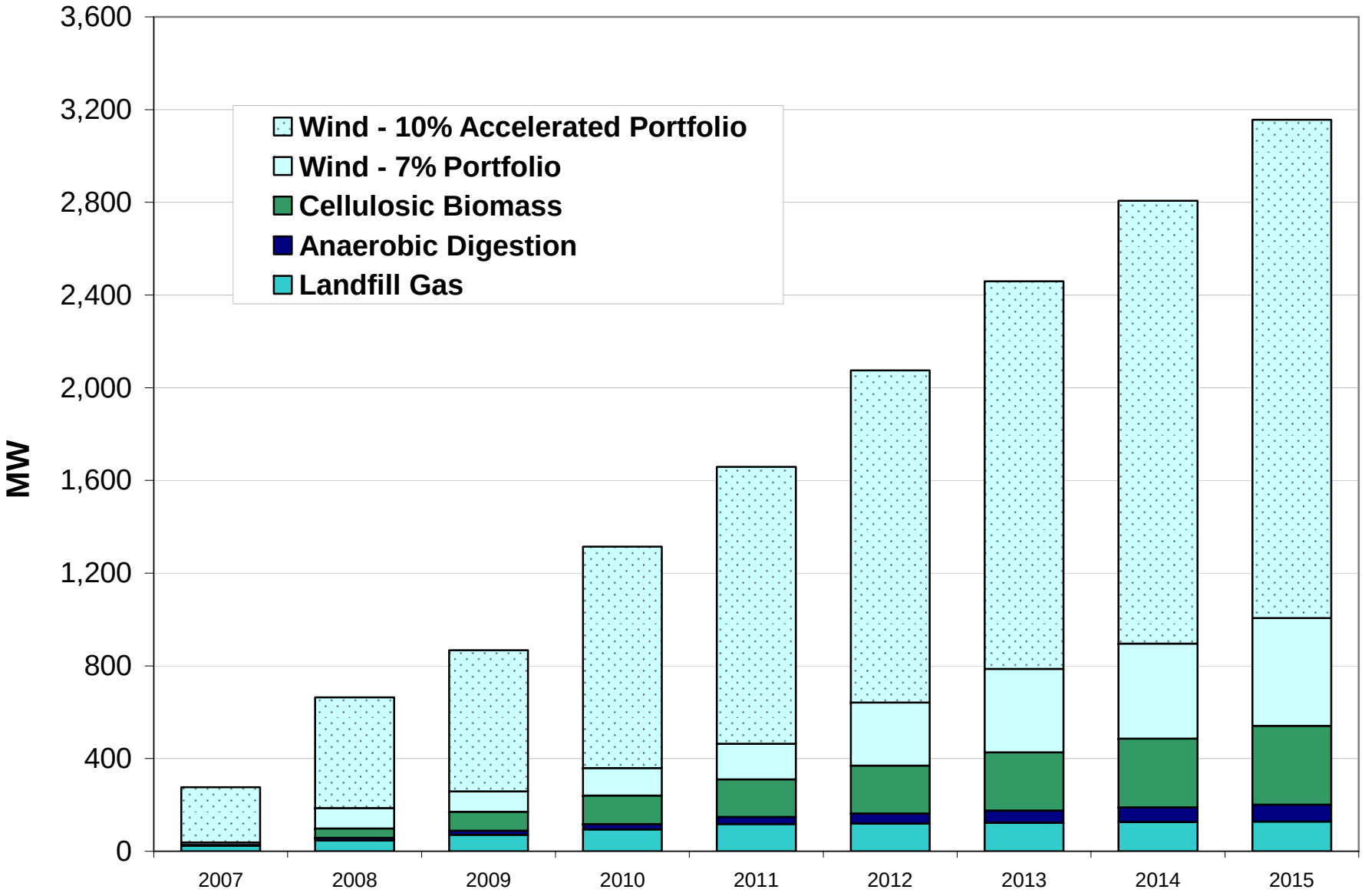
- Mandatory Renewable Portfolio Standard (RPS)
  - All Michigan load serving entities
  - All meet statewide average (~3%) by 2009
  - 10% by 2015, 20% by 2025, with “stop & check” hearing in 2014 to reset RPS for 2025
- Existing renewables count for initial 3%
- MPSC can approve annual deferrals for adverse rate impacts and hardship

Renewable Energy
Proposed Legislative Changes (2)

- RECs can be used for compliance
- MPSC sets Alternative Compliance Payment (ACP, in ¢/kWh) every 2 years
- ACP can be used for compliance, in some circumstances (LSEs <100,000 customers and all LSEs through 2012)
- ACP$ go to state fund for community-based renewable energy projects



Michigan's 21st Century Energy Plan


3,600
3,200
2,800
2,400
2,000
1,600
1,200
800
400
0
MW
Wind - 10% Accelerated Portfolio
Wind - 7% Portfolio
Cellulosic Biomass
Anaerobic Digestion
Landfill Gas
2007
2008
2009
2010
2011
2012
2013
2014
2015

Topic/Feature of RPS	MPSC Staff Proposal
Applies to which LSEs?	•RPS applies to all load serving entities (LSEs). •LSEs can comply by producing or purchasing renewable energy, or procuring renewable energy certificates (RECs). •LSEs with less than 50,000 customers can also comply by making a Commission-established alternative compliance payment (ACP), per kWh
RPS Targets	•Target is for all LSEs to meet statewide average by end of 2009. Then, all LSEs increase by approximately 1% of total sales per year until the statewide average reaches 10% by end of 2015. The Commission shall hold a hearing in 2014 to determine whether it is in the public interest to pursue an RPS target of 20 percent by 2025. •Targets will be mandatory, but MPSC can defer targets one year at a time for hardship to an LSE or its customers.
Eligible Resources	•Use definition from Michigan Customer Choice and Electricity Reliability Act; (MCL 460.10g(1)(f)). •Do not include pumped storage, except when pumping using renewables. •Non-electric-producing technologies are not eligible. They are supported only through non-RPS policies. •Out-of-state renewables must be “new” (>1/1/1999)

Topic/Feature of RPS	MPSC Staff Proposal
Eligible Facilities	• Producing electricity delivered in Michigan for consumption by end-use customers and meeting the MCL 460.10g (1)(f) definition •Existing in-state renewables will be eligible to count towards reaching and meeting the statewide average. •Only new resources will be eligible for meeting RPS expansions, beginning in year four • MPSC will certify facilities for utility PPAs
RECs	• RECs can be used to meet 100% of RPS obligation •Out-of-state RECs can count, but only if air quality and economic development benefits accrue to Michigan •Two year maximum REC banking •MPSC will establish requirements for independent REC certification, verification, and tracking
Rate-Impact Limit	• RPS targets may be deferred for one year at a time, for hardship to an LSE or its customers or if the Commission determines that rate impacts are burdensome •ACP amount set by MPSC will act as a second rate impact limit, and ACP will be recoverable in rates

Topic/Feature of RPS	MPSC Staff Proposal
Cost Recovery	•Utility costs recoverable through PSCR process •AES costs recoverable through rates, or via non-bypassable charge
Compliance Reporting	•All LSEs report annually to MPSC •MPSC will set report content requirements
RPS Program Review	•MPSC will report annually to Legislature and Governor
Other Associated Policies	•Siting/zoning guidelines/standards •Property tax guidelines/standards, and exemptions for residential systems •ACP payments will be placed into a fund which is only used for in-state renewable energy development, especially community-based systems

Proposed MI RE Growth Rate % is Modest and Reasonable

- 5 states RPSs call for 0.7% per year or less: MD, DC, MA, NY, AZ
- 6 states 0.8% or 0.9% per year: DE, HI, WI, CO, MN, PA
- MI 10%, 2009 to 2015 = 1.2% per year
- MI 20% by 2025 = 1.1% per year
- 4 states 1.0 to 1.2%: IL, NM, RI, NJ
- 4 states > 1.4%: NV, MT, WA, CT

Distributed Energy Technology Policy Initiatives

- Improve merchant plant market access
- Commission authority to resolve utility PPA issues
- Market barriers in MPSC rates & tariffs reduced or removed for self-service power
- Workable interconnection standards and procedures (through U-15113), for both merchant plants and self-service power

Distributed/Renewable Legislation

- Authorize Commission to undertake utility solar energy pilot program
- Property tax credits for residential renewable energy installations
- Authorize Commission to adopt distribution system use tariffs
- Authorize Commission to expand net metering eligibility, from < 30 to <150 kW

Additional Recommendations

- Initiate demand response pilot collaborative
- Initiate smart grid collaborative
- Apprise local jurisdictions of renewable energy siting guidelines
- Apprise local jurisdictions of revenue based proper tax options
- Revise rates & tariffs for 150 kW & larger self-service power

Future MREP Tasks
for 21st Century Energy Plan Implementation

- Educate Property Tax Assessors about method using value of energy output (p30)
- Share wind siting guidelines with planners; draft guidelines for siting/zoning biomass, solar, other (App. 1: p10, 34, 67)
- Revenue basis taxation & residential property tax credits/exemptions (App 1: p10, 34, 53, 70)

MREP Wind Working Group 2007

- Improve on-shore wind energy resource estimates, working with NREL to verify Michigan 70m and possibly 100m maps
- Improve off-shore wind energy potential estimates, working with NREL, other Great Lakes states, and AWS Truewind to develop Great Lakes off-shore wind resource maps
- Finalize Draft (CNF) Michigan Wind Energy Resource Report ASAP

MREP Wind Working Group 2007 (2)

- Continue efforts to inform and educate the public, farmers, businesses, institutions, and political leaders about wind energy opportunities
- Provide forums and assistance to foster the development of a wind energy manufacturing industry in Michigan
- Educate local planning & zoning officials on state wind siting guidelines

MREP “leftovers” from 2005 Biomass Committee

- Continue Resource Assessment
- Identify best practices for policy for biomass incentives
- Develop a consensus proposal for biomass self-service power utility rates
- Identify one or more target markets and create a comprehensive development plan
- New biomass siting guidelines

MREP New Hydroelectricity Committee

- Set meeting schedule and recruit participants
- Plan for resource assessment and Atlas project
- Work with state agencies and FERC to streamline licensing procedures (or exemption from licensing) for Michigan micro-hydro
- New hydro siting guidelines

MREP “leftovers” from 2005 Solar Committee

- Continue resource assessment and Atlas project (Solar “Green Map” for Michigan; see http://www.greenmap.com)
- Complete research paper on value of PV & net metering in Michigan
- Develop proposal for solar access & easements

MREP “leftovers” from 2005 Solar Committee (2)

- Explore and develop recommendations for solar energy financial incentives, including incentives for net metering
- Use education and outreach programs to support solar energy in Michigan
- New: Pilot programs proposed in 21st Century Energy Plan
- New: Solar siting guidelines

MREP “leftovers” from 2005 Economic Impacts Committee

- Complete summary and annotated bibliography of Michigan, regional, and national renewable energy (and energy efficiency) economic impact studies
- Complete Michigan Renewable Energy and Energy Efficiency Economic Impacts Study (a project of Michigan DEQ and NextEnergy)
- New “Manufacturing Committee” Activity?

MREP “leftovers” from 2005 Financing Committee

- Complete index of all state and federal existing financial assistance and incentives programs
- Promote NextEnergy incentives
- Educate policy makers on ecological tax reform
- New: One-stop-shop for assistance with grant proposals, for DLEG, DEQ, Dept of Agriculture

MREP “leftovers” from 2005 Ratemaking & Net Metering Committee

- Net metering program evaluation reports in 2007, 2009
- Self-service rates/tariffs for customers larger than net metering size
- New: Staff proposed net metering collaborative (in U-15113)
- New: Review and adjust rates & tariffs as needed to address barriers

MREP “newbies” for 2007 and beyond

- Modeling renewables combined with storage, including batteries, pumped storage hydro (Ludington) or compressed air, and plug-in-biofueled-hybrid-vehicles
- More opportunities for student projects
- 2006 MREP Annual Report, Net Metering Report, Michigan Renewable Energy Data Report for 2005-2006

Website for 21st Century Energy Plan

http://www.dleg.state.mi.us/mpsc/electric/capacity/energyplan

MREP Website

http://www.michigan.gov/mrep

Net Metering Website

http://www.michigan.gov/netmetering